

REMARKS/ARGUMENTS

STATUS OF CLAIMS

Applicants have amended Claims 1 and 13. Applicants have cancelled Claims 12 and 14, and thus, the rejections of Claims 12 and 14 are moot. Applicants respectfully request reconsideration of pending Claims 1-5, 7-11, and 13 in light of the following remarks.

CLAIM REJECTIONS – 35 U.S.C. §112

Claims 12-14 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Applicants have cancelled Claims 12 and 14 and incorporated the subject matter of Claims 12 and 14 into independent Claim 1. Applicants respectfully submit that the current subject matter of Claims 1 and 13 is supported by the original specification and is not new matter.

Figure 5A of the current application illustrates elements 105A, 105B, and 105C as being interlocked and linked by two linking components shown in phantom. The elements 105A and 105B interlock so that the element 105A is inhibited from moving inwardly when the element 105B is in the position shown in Figure 5A. Figure 5A also illustrates that element 105A is linked to element 105C by a rectangular linking component shown in phantom at the top of the figure. Figure 5A further illustrates that the elements 105A and 105C substantially mirror each other and that they are rotatable relative to one another. More specifically, the element 105A can rotate inwardly relative to the element 105C about a pin (shown as a small circle) on the rectangular part. In addition, Figure 5A illustrates that the element 105B is linked to the element 105C by a tooth-shaped linking component shown in phantom on the left side of the figure. More specifically, the element 105B can rotate inwardly about another pin (also shown as a small circle) on the tooth-shaped part relative to the element 105C. One of ordinary skill in the art would be able to recognize these motions based on Figure 5A alone. Accordingly, the current application as originally filed with Figure 5A supports the subject matter of Claims 1 and 13, including arced elements that are rotatable relative to each other, interlock, are linked, and are

substantially mirror images of each other. Thus, Applicants respectfully request removal of the rejection under 35 U.S.C. § 112, first paragraph.

CLAIM REJECTIONS – 35 U.S.C. §102

Independent Claim 1

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,720,411 issued to Darby et al. (hereinafter “Darby”). Amended Claim 1 specifies “wherein the retainer ring member is made of at least two arced elements that are rotatable relative to each other, and wherein the at least two arced elements interlock and are linked.”

Darby discloses a pressure vessel 11 having a removable end closure assembly 13 and an elongated tubular shell 15, which has an open end where the closure assembly 13 is located to seal the pressure vessel 11. *Darby*, col. 5, lines 3-8. The end closure assembly 13 includes a two-piece head in the form of a dome-shaped metal element 39 and a face plate 41. *Id.* at col. 7, lines 26-28. The tubular shell 15 includes a main body section 19 and a bell section 21 that has an annular element 23 fixedly imbedded therein to inter-engage the end closure assembly 13. *Id.* at col. 5, lines 45-52. The annular element 23 includes a central groove 27 to create a pocket that receives a locking ring 79 to retain the two-piece head in its sealed orientation. *Id.* at col. 8, lines 49-58. As shown in Figure 1 of Darby, the locking ring 79 has a one-piece coiled configuration.

If the locking ring 79 of Darby is the “retainer ring member” of Claim 1, Darby does not disclose that the locking ring 79 is made of two or more arced elements that are rotatable relative to each other. Rather, the locking ring 79 of Darby is a coil that compresses (as shown in Figure 4) and decompresses (as shown in Figure 1). In addition, Darby does not disclose that the locking ring 79 includes interlocking and linked elements. Rather, the locking ring 79 is one continuous element.

Accordingly, Darby does not disclose “wherein the retainer ring member is made of at least two arced elements that are rotatable relative to each other, and wherein the at least two

arced elements interlock and are linked,” as specified by amended Claim 1. Thus, independent Claim 1 and dependent Claims 2-5, 7-11, and 13 are allowable.

Dependent Claims 2, 4, 5, 7, 8, 10-11, and 13

Claims 2, 4, 5, 7, 8, 10-11, and 13 stand rejected under 35 U.S.C. §102(b) as being anticipated by Darby. Claims 2, 4, 5, 7, 8, 10-11, and 13 depend from independent Claim 1 and are therefore allowable for the reasons set forth above with respect to Claim 1. Claims 2, 4, 5, 7, 8, 10-11, and 13 also include additional patentable subject matter not specifically discussed herein.

CLAIM REJECTIONS – 35 U.S.C. §103(a)

Independent Claim 1

Claim 1 also stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Darby, over Darby in view of U.S. Patent No. 2,401,856 issued to Brock (hereinafter “Brock”), and over Darby in view of U.S. Patent No. 3,136,230 issued to Buckley (hereinafter “Buckley”).

As discussed above, Darby does not teach or suggest “wherein the retainer ring member is made of at least two arced elements that are rotatable relative to each other, and wherein the at least two arced elements interlock and are linked.” As also suggested by the Examiner on page 4 of the Office Action, Applicants respectfully submit that Darby does not teach or suggest at least two arced elements that are movable, much less rotatable, relative to one another.

Brock does not cure the deficiencies of Darby. Brock teaches several embodiments of a retaining member 10 including a central portion 11 from which extend radial spoke portions 12, each terminating in a pair of limbs 13a, 13b. *Brock*, col. 2, lines 34-49. As manufactured, the limbs 13a, 13b are distorted so that the retaining member 10 has a frustoconical shape. *Id.* at col. 2, lines 46-55. During assembly, the retaining member 10 is slid into position against a shoulder 20 and flattened by a press or punch. *Id.* at col. 3, lines 7-13. If the retaining member 10 of Brock is the “retainer ring member” of Claim 1 and the limbs 13a, 13b of Brock are the “at least

two arced elements” of Claim 1, the limbs 13a, 13b are not rotatable relative to each other. Rather, the limbs 13a, 13b deform with respect to the central body portion 11 during assembly. The limbs 13a, 13b also do not interlock, because the limbs 13a, 13b are integral with the central body portion 11 and do not engage one another. In addition, the subject matter of Brock is not analogous to the subject matter of Claim 1. One skilled in the pressure vessel art would not consider the piston assemblies of Brock to be relevant to the particular problem with which the inventors of the current application were concerned. Accordingly, Brock does not teach or suggest the subject matter of Claim 1.

Buckley does not cure the deficiencies of Darby and Brock. Buckley teaches a hydraulic cylinder 10 including a casing 12, a cylinder head 24 secured within the casing 12, and a locking ring 28. The locking ring 28 includes three ring segments 30, 32, 34. The locking ring 28 engages concentric grooves 26 in the casing 12 to prevent the cylinder head 24 from sliding outward. *Buckley*, col. 2, line 72 to col. 3, line 4. When the ring segments 30, 32, 34 are engaged with the concentric grooves 26, the ring segment 30 can be engaged in an operating position or disengaged from the operating position without moving the other ring segments 32 and 34. *Id.* at col. 2, lines 32-38. If the locking ring 28 of Buckley is the “retainer ring member” of Claim 1 and the ring segments 30, 32, 34 of Buckley are the “at least two arced elements” of Claim 1, the ring segments 30, 32, 34 are not linked and are not rotatable relative to each other. Rather, the ring segments 30, 32, 34 are separate elements that slide or translate with respect to one another, but do not rotate with respect to one another. In addition, the subject matter of Buckley is not analogous to the subject matter of Claim 1. One skilled in the pressure vessel art would not consider the hydraulic cylinders of Buckley to be relevant to the particular problem with which the inventors of the current application were concerned. Accordingly, Buckley does not teach or suggest the subject matter of Claim 1.

In summary, none of Darby, Brock, or Buckley, either alone or in combination, teaches or suggests “wherein the retainer ring member is made of at least two arced elements that are rotatable relative to each other, and wherein the at least two arced elements interlock and are

linked,” as specified by amended Claim 1. Therefore, independent Claim 1 and dependent Claims 2-5, 7, 10-11, and 13 are allowable.

Dependent Claims 4, 5, 7, 8, 10-11, and 13

Claims 4, 5, 7, 8, 10-11, and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Darby, over Darby in view of Brock, or over Darby in view of Buckley. Claims 4, 5, 7, 8, 10-11, and 13 depend from independent Claim 1 and are therefore allowable for the reasons set forth above with respect to Claim 1. Claims 4, 5, 7, 8, 10-11, and 13 also include additional patentable subject matter not specifically discussed herein.

Dependent Claims 2 and 3

Claims 2 and 3 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Darby, over Darby in view of Brock, or over Darby in view of Buckley, and in view of U.S. Patent No. 3,447,712 issued to Galasso et al. Claims 2 and 3 depend from independent Claim 1 and are therefore allowable for the reasons set forth above with respect to Claim 1. Claims 2 and 3 also include additional patentable subject matter not specifically discussed herein.

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CONCLUSION

In view of the above, Applicants respectfully request entry of the amendment and allowance of pending Claims 1-5, 7-11, and 13.

Respectfully submitted,

A handwritten signature in black ink, reading "Raye Lynn Daugherty". The signature is fluid and cursive, with the first name "Raye" and last name "Daugherty" clearly legible.

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